

CLAIMS

What is claimed is:

1. A method for producing a refreshed developer, the method comprising the steps of:

5 (a) adding a water-soluble polyoxyalkylene derivative to a loaded silicate-containing developer,

in which:

about 0.8 wt% to about 5.0 wt% of the water-soluble polyoxyalkylene derivative, based on the weight of the loaded developer, is added to the loaded
10 developer;

the polyoxyalkylene derivative comprises recurring units of the $-(CH_2-CHR-O)-$ structural unit, in which each R is independently hydrogen or methyl;

the loaded developer comprises loaded solids; and

15 the loaded developer has a loaded solids content of about 0.1 wt% to about 10 wt%;

(b) separating insoluble material from the developer and producing an essentially colorless liquid, in which the insoluble material comprises material dispersed in the loaded developer, a precipitate formed in step (a), or a
20 combination thereof; and

(c) adjusting the alkalinity level of the essentially colorless liquid and producing the refreshed developer.

2 The method of claim 1 in which 1.2 wt% to about 2.5 wt% of the water-soluble polyoxyalkylene derivative, based on the weight of the loaded
25 developer, is added to the loaded silicate-containing developer in step (a).

3. The method of claim 1 in which the polyoxyalkylene derivative is selected from the group consisting of polyethylene oxides, polypropylene oxides, copolymers of ethylene oxide and propylene oxide, polycondensation products of at least one C_2-C_3 alkylene oxide and ethylene diamine, polyoxyalkylated
30 monoamines, and mixtures thereof.

4. The method of claim 3 in which the polyoxyalkylene derivative is a polycondensation products of at least one C₂-C₃ alkylene oxide and ethylene diamine.

5 5. The method of claim 3 in which the polyoxyalkylene derivative is a polyoxyalkylated monoamine.

6. The method of claim 3 in which the polyoxyalkylene derivative is selected from the group consisting of polyethylene oxides, polypropylene oxides, and copolymers of ethylene oxide and propylene oxide, and mixtures thereof.

10 7. The method of claim 6 in which the polyoxyalkylene derivative is a polypropylene oxide.

8. The method of claim 3 in which the alkalinity of the essentially colorless liquid is adjusted to between about 4.5 and about 10.0.

9. The method of claim 3 in which alkalinity of the essentially colorless liquid is adjusted to between about 5.5 and about 8.0.

15 10. A method comprising the steps of:

(a) developing an imaged imageable element with a silicate-containing developer having an alkalinity level of about 4.5 to about 10.0, and producing a loaded developer comprising loaded solids,

in which:

20 the imageable element comprises an imageable layer over a hydrophilic substrate,

the imageable layer comprises a polymeric material,

25 the polymeric material is either (i) dispersible in an aqueous solution that has a pH of about 12.0 to about 14.0 or (ii) soluble in an aqueous solution that has a pH of about 12.0 to about 14.0 and insoluble in an aqueous solution that has a pH below about 11.0,

the loaded solids comprise the polymeric material, and

the loaded developer has a loaded solids content of about 0.1 wt% to about 10 wt%;

(b) adding about 0.8 wt% to about 5.0 wt% of a water-soluble polyoxyalkylene derivative, based on the weight of the loaded developer, to the loaded developer, in which the polyoxyalkylene derivative comprises recurring units of the $-(CH_2-CHR-O)-$ structural unit, in which each R is independently

5 hydrogen or methyl;

(c) separating insoluble material from the developer and producing an essentially colorless liquid, in which the insoluble material comprises material dispersed in the loaded developer, a precipitate formed in step (b), or a combination thereof; and

10 (d) adjusting the alkalinity level of the essentially colorless liquid to between about 4.5 and about 10.0 and producing a refreshed developer.

11. The method of claim 10 additionally comprising, after step (d), the step of developing an additional imaged imageable element with the refreshed developer.

15 12. The method of claim 11 in which the alkalinity of the developer is about 5.5 to about 8.0, and the alkalinity of the essentially colorless liquid is adjusted to between about 5.5 and about 8.0.

13. The method of claim 10 in which, in step (a), 1.2 wt% to about 2.5 wt% of the water-soluble polyoxyalkylene derivative, based on the weight of the
20 loaded developer, is added to the loaded silicate-containing developer.

14. The method of claim 10 in which the polyoxyalkylene derivative is selected from the group consisting of polyethylene oxides, polypropylene oxides, copolymers of ethylene oxide and propylene oxide, polycondensation products of at least one C_2-C_3 alkylene oxide and ethylene diamine, polyoxyalkylated
25 monoamines, and mixtures thereof.

15. The method of claim 10 in which the imageable element is a one-layer plate, the imageable layer comprises an o-diazonaphthoquinone, and the polymeric material is a novolac resin.

16. The method of claim 15 in which the polyoxyalkylene derivative is selected from the group consisting of polypropylene oxides, polycondensation products of at least one C₂-C₃ alkylene oxide and ethylene diamine, polyoxyalkylated monoamines, and mixtures thereof.

5 17. The method of claim 16 additionally comprising, after step (d), the step of developing an additional imaged imageable element with the refreshed developer.

18. The method of claim 10 in which the imageable layer comprises a dissolution inhibitor, and the polymeric material is a novolac resin.

10 19. The method of claim 18 in which the polyoxyalkylene derivative is selected from the group consisting of polypropylene oxides, polycondensation products of at least one C₂-C₃ alkylene oxide and ethylene diamine, polyoxyalkylated monoamines, and mixtures thereof.

15 20. The method of claim 19 additionally comprising, after step (d), the step of developing an additional imaged imageable element with the refreshed developer.

21. The method of claim 10 in which the imageable element is infrared sensitive and negative working.

20 22. The method of claim 21 in which the polyoxyalkylene derivative is selected from the group consisting of polypropylene oxides, polycondensation products of at least one C₂-C₃ alkylene oxide and ethylene diamine, polyoxyalkylated monoamines, and mixtures thereof.

23. The method of claim 22 additionally comprising, after step (d), the step of developing an imaged imageable element with the refreshed developer.

25 24. The method of claim 10 in which the imageable element comprises at least two layers.

25. The method of claim 24 in which the polyoxyalkylene derivative is selected from the group consisting of polypropylene oxides, polycondensation

products of at least one C₂-C₃ alkylene oxide and ethylene diamine, polyoxyalkylated monoamines, and mixtures thereof.

26. The method of claim 25 additionally comprising, after step (d), the step of developing an additional imaged imageable element with the refreshed
5 developer.

27 The method of claim 10 in which the alkalinity of the developer is about 5.5 to about 8.0, and the alkalinity of the essentially colorless liquid is adjusted to between about 5.5 and about 8.0.

Patent - 6,630,630